QUES 05:-

A train moves towards a stationary observer with speed 34 m/s. The train sounds a whistle and its frequency registered by the observer is f_1 If the speed of the train is reduced to 17 m/s, the frequency registered is f_2 If speed of sound is 340 m/s, then the ratio f_1/f_2 is:

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(a) 18/17 (b) 19/18 (c) 20/19 (d) 21/20

(b) According to Doppler's effect, when source is moving but observer at rest

$$f_{app} = f_0\left[\frac{V}{V - V_s}\right] \Rightarrow f_1 = f_0\left[\frac{340}{340-34}\right]$$

and, $f_2 = f_0\left[\frac{340}{340-17}\right]$

$$\therefore \frac{f_1}{f_2} = \frac{340-17}{340-34} = \frac{323}{306} \text{ or, } \frac{f_1}{f_2} = \frac{19}{18}$$